

Notice of Allowability

Application No.

10/068,513

Examiner

Saleha R. Mohamedulla

Applicant(s)

PIERRAT, CHRISTOPHE

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to filings on February 6, 2002.
2. ☒ The allowed claim(s) is/are 1-37.
3. ☒ The drawings filed on 2/6/02 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.
5. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. <u>3,4</u> | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Mark Haynes on November 21, 2003.

The application has been amended as follows:

IN THE SPECIFICATION

In the fifth paragraph under the heading "Claim of Benefit of Provisional Application", after "09/669,368," insert --now U.S. Patent No. 6,524,752, --.

Under the heading "Brief Description of the Figures" insert

--The file of this patent contains at least one drawing executed in color. Copies of this patent with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee.--

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:
2. The prior art does not teach or suggest a method of making a phase shift mask pattern and a trim mask pattern where the phase shift mask pattern has a first phase shift window, a second phase shift window with complementary phase, an opaque field with a control width, where the trim mask pattern has an opaque trim shape in a location corresponding with the phase transition

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region and having a trim width in a dimension parallel with the control width, where the method includes applying an adjustment to one of the patterns based on one of a rule based or model based correction, where the adjustment includes more than one of adjusting the window widths, control width, trim width, adding a sub-resolution opaque shape to the windows, adding a clear shape to the trim shape or adding an opaque shape to the windows and a clear shape to the trim. The prior art does not teach or suggest a method comprising identifying cutting areas for phase shift regions based upon characteristics of the target pattern, assigning phase values to phase shift windows by cutting the phase shift regions in selected ones of the cutting areas to define cuts separating the phase shift regions into phase shift windows, applying adjustments to the phase shift windows for proximity correction and storing a result of the laying out and said assigning in a computer readable medium. The prior art does not teach or suggest identifying cutting areas in the phase shift regions, ranking the cutting areas, and identifying, and assigning phase values to, phase shift windows in the phase shift pattern by selectively using the plurality of cutting areas and the ranking to resolve phase conflicts.

3. US# 5,636,131 to Liebmann et al. teaches defining areas needing phase assignment, propagation of phase assignment of interrelated critical features and designing trim features, but does not teach or suggest the adjusting and cutting steps of the present invention. US# 6,228,539 to Wang teaches creating a phase shift mask and a trim mask but does not teach the adjusting and cutting steps of the present invention.

4. Some of the references cited in the IDS filed September 23, 2002 are crossed out as the IDS contains no dates for the references.

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6. An informal examiner's amendment was made to the first sentence of the specification reflecting updated continuing data.
6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saleha R. Mohamedulla whose telephone number is (703) 308-1260. The examiner can normally be reached on M-F (8:00 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

srn
November 26, 2003



MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700